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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,189

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Ermanno Filippi

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EXAMINER

MARTINEZ, BRITTANY M

ART UNIT

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,189	Applicant(s) FILIPPI ET AL.	
	Examiner BRITTANY M. MARTINEZ	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/13/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Citation to the Specification will be in the following format (S. p. #, P) where # denotes the page number and P is the paragraph number. Citation to U. S. Patent literature will be in the format (Inventor, c. #, l. LL) where # is the column number and LL is the line number.

Status of Application

Claims 1-7 are pending in the instant application and have been examined.

Priority

1. The instant application is a national stage entry of PCT/EP03/09931, filed September 8, 2003, which claims priority to European Patent Application No. 02023316.9, filed October 17, 2002. It is noted, however, that Applicant has not filed a certified copy of the European application as required by 35 U.S.C. 119(b).

Specification

1. The disclosure is objected to because of the following informalities: In the "Detailed Description of the Figures," reference characters "1" (S., p. 2, 0024) and "10" (S., p. 2, 0023) have both been used to designate the heat exchanger; reference characters "1" (S., p. 2, 0026) and "11" (S., p. 2, 0024) have both been used to designate the side; reference characters "18" (S., p. 2, 0027) and "19" (S., p. 2, 0024)

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have both been used to designate the second chamber; reference characters "20" (S., p. 2, 0037) and "17" (S., p. 2, 0033) have both been used to designate the collector; and reference characters "19,20" (S., p. 2, 0038-0039) and "12" (S., p. 1, 0021) have both been used to designate the distribution suppliers. Appropriate correction is required.

Claim Objections

2. **Claims 2-4** are objected to because of the following informalities: In **Claim 2**, 3rd and 5th lines, "is" should be replaced with "are." In **Claim 3**, 5th line, "a flow a" should be replaced with "a flow of." In **Claim 4**, "supported fixed" should be deleted and replaced with either "supported" or "fixed." The claims are generally narrative and indefinite, failing to conform to current U.S. practice. They are replete with grammatical and idiomatic errors. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 2 and 7** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. **Claim 2** recites the limitation "it" in the 12th line of the claim. There is insufficient antecedent basis for this limitation in the claim.

6. **Claim 7** recites the limitation "it" in the 3rd line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Badische et al. (FR 2029533 A).
4. With regard to **Claim 1**, Badische discloses a method for carrying out highly exothermic oxidative reactions under pseudo-isothermal conditions, between reactants fed in continuous flow to a predetermined catalytic bed, characterized in that at least a part of said continuous flow of reactants is fed at different points of said catalytic bed corresponding to different successive stages of the reaction, at respective different predetermined temperatures and flow rates (Badische, Example 2; Figure 2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Badische et al. (FR 2029533 A) in view of Filippi et al. (EP 1236505 A1).

9. With regard to **Claim 2**, Badische discloses a method for carrying out highly exothermic oxidative reactions under pseudo-isothermal conditions, between reactants fed in continuous flow to a predetermined catalytic bed, characterized in that at least a part of said continuous flow of reactants is fed at different points of said catalytic bed corresponding to different successive stages of the reaction, at respective different predetermined temperatures and flow rates (Badische, Example 2; Figure 2). Badische further discloses a plurality of distribution-suppliers (valves) being positioned at said

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catalytic bed at different points thereof strictly corresponding to different predetermined stages of said oxidative reaction (Badische, Example 2; Figure 2: 112-116); and said continuous flow of reactants being divided into a first part or main flow and a second part or control flow with a predetermined temperature and flow rate; said first part or main flow being preheated through heat exchange, feeding it through said plurality of exchangers; said main flow of preheated reactants being recovered and fed continuously to said catalytic bed; and said second part or control flow being fed to said plurality of distribution-suppliers to inject respective fresh flows of reactants at a predetermined temperature and flow rate into the catalytic bed (Badische, Example 2; Figure 2).

10. Badische does not explicitly disclose the plurality of distribution-suppliers being positioned in said catalytic bed; or said first part or main flow being preheated through heat exchange with said catalytic bed (**Claim 2**).

11. With regard to **Claim 2**, Filippi discloses a plurality of distribution-suppliers being positioned in said catalytic bed at different points thereof strictly corresponding to different predetermined stages of said oxidative reaction; said continuous flow of reactants being divided into a first part or main flow and a second part or control flow with a predetermined temperature and flow rate; said first part or main flow being preheated through heat exchange with said catalytic bed, feeding it through said plurality of exchangers; said main flow of preheated reactants being recovered and fed continuously to said catalytic bed; and said second part or control flow being fed to said plurality of distribution-suppliers to inject respective fresh flows of reactants at a

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predetermined temperature and flow rate into the catalytic bed (Filippi, "Abstract;" Claims 1-6; Figures 1-5).

12. Thus, it would have been obvious to one of ordinary skill in the art to modify the method of Badische with the process taught by Filippi in order to obtain a process with temperature control within a very narrow range of values around a predetermined value (Filippi, c. 2, 0012; c. 3, 0017).

13. **Claims 3-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Badische et al. (FR 2029533 A) as applied to **Claim 1** above, and further in view of Filippi et al. (EP 1236505 A1).

14. With regard to **Claim 3**, Badische discloses an apparatus for carrying out a highly exothermic oxidative reaction in pseudo-isothermal conditions, comprising a plurality of heat exchangers (Badische, Example 2; Figure 2).

15. Badische does not explicitly disclose each of said exchangers being associated with at least one distribution-supplier suitable for being fed continuously by a flow of reactants at a predetermined temperature and flow rate (**Claim 3**); at least one distribution-supplier being supported by said respective heat exchanger (**Claim 4**); said heat exchanger being plate-shaped and substantially rectangular, inside which a first chamber, intended to be crossed by a respective flow of reactants to be preheated, and a second chamber, separated fluid-tight from said first chamber and in fluid communication with said at least one distribution-supplier are defined (**Claim 5**); or said distribution-supplier comprising a carter fixed to a wall of a respective plate-shaped heat

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exchanger, with which it substantially defines a duct in fluid communication, on one side, with said second chamber of the exchanger and, on the other side, with the outside of the exchanger itself, through a plurality of holes formed in said carter (**Claim 6**).

16. With regard to **Claim 3**, Filippi discloses an apparatus for carrying out a highly exothermic oxidative reaction in pseudo-isothermal conditions, comprising a plurality of heat exchangers, wherein with each of said exchangers is associated at least one distribution-supplier suitable for being fed continuously by a flow of reactants at a predetermined temperature and flow rate (Filippi, "Abstract;" Claims 1-6; Figures 1-5).

17. With regard to **Claim 4**, Filippi discloses at least one distribution-supplier being supported by said respective heat exchanger (Filippi, "Abstract;" Claims 1-6; Figures 1-5).

18. With regard to **Claim 5**, Filippi discloses said heat exchanger being plate-shaped and substantially rectangular, inside which a first chamber, intended to be crossed by a respective flow of reactants to be preheated, and a second chamber, separated fluid-tight from said first chamber and in fluid communication with said at least one distribution-supplier are defined (Filippi, "Abstract;" c. 1, 0003; Claims 1-6; Figures 1-5).

19. With regard to **Claim 6**, Filippi discloses said distribution-supplier comprising a carter fixed to a wall of a respective plate-shaped heat exchanger, with which it substantially defines a duct in fluid communication, on one side, with said second chamber of the exchanger and, on the other side, with the outside of the exchanger

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itself, through a plurality of holes formed in said carter (Filippi, "Abstract;" Claims 1-6; Figures 1-5).

20. Thus, it would have been obvious to one of ordinary skill in the art to modify the apparatus of Badische with the apparatus of Filippi in order to obtain an apparatus capable of temperature control within a very narrow range of values around a predetermined value (Filippi, c. 2, 0012; c. 3, 0017).

21. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Badische et al. (FR 2029533 A) in view of Filippi et al. (EP 1236505 A1) as applied to **Claim 3** above, and further in view of Zardi (US 4,769,220).

22. With regard to **Claim 7**, Filippi discloses carrying out highly exothermic catalyzed oxidative reactions in pseudo-isothermal conditions, comprising utilizing heat exchangers immersed in a catalytic bed (Filippi, "Abstract;" c. 1, 0002; Claims 1-6; Figures 1-5).

23. The aforementioned applied art does not explicitly disclose a pseudo-isothermal chemical reactor for carrying out highly exothermic catalyzed oxidative reactions, comprising a shell in which is defined a reaction zone at least partially occupied by a catalytic bed (**Claim 7**).

24. With regard to **Claim 7**, Zardi discloses a pseudo-isothermal chemical reactor for carrying out highly exothermic catalyzed oxidative reactions, comprising a shell in which is defined a reaction zone at least partially occupied by a catalytic bed, wherein heat

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exchangers are immersed in said catalytic bed (Zardi, "Abstract;" Figure; c. 1, l. 10-13 and 60-68; c. 2, l. 1-2; Claim 1).

25. Thus, it would have been obvious to one of ordinary skill in the art to utilize the apparatus of the aforementioned applied art in the reactor of Zardi because one of ordinary skill in the art could have pursued the known potential options for utilizing an apparatus for carrying out a highly exothermic oxidative reaction in pseudo-isothermal conditions within his or her technical grasp with a reasonable expectation of success.

Double Patenting

26. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. **Claims 3-7** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-3 of copending Application No. 11/572403. Although the conflicting claims are not identical, they are not patentably

distinct from each other because Application No. 11/572403 discloses a pseudo-isothermal chemical reactor for carrying out highly exothermic catalyzed oxidative reactions, comprising a shell in which is defined a reaction zone at least partially occupied by a catalytic bed, wherein heat exchangers according to **Claim 3** are immersed in said catalytic bed, substantially as in the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. **Claims 1-7** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-10 of U.S. Patent No. 7,186,389 B2 in view of Filippi et al. (EP 1236505 A1). U.S. Patent No. 7,186,389 B2 discloses a method for carrying out highly exothermic oxidative reactions in pseudo-isothermal conditions, an apparatus for doing such, and a reactor for doing such substantially as in the instant application. However, U.S. Patent No. 7,186,389 B2 does not explicitly disclose a plate-shaped heat exchanger. Filippi discloses said heat exchanger being plate-shaped and substantially rectangular, inside which a first chamber, intended to be crossed by a respective flow of reactants to be preheated, and a second chamber, separated fluid-tight from said first chamber and in fluid communication with said at least one distribution-supplier are defined (Filippi, "Abstract;" c. 1, 0003; Claims 1-6; Figures 1-5). Thus, it would have been obvious to one of ordinary skill in the art to modify the invention of U.S. Patent No. 7,186,389 B2 with the plate-shaped heat exchangers of Filippi since the equivalence of the heat exchangers of U.S. Patent No.

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7,186,389 B2 and Filippi for their use in the instant invention would have been obvious to one of ordinary skill in the art and one of ordinary skill in the art could have pursued the known potential options for heat exchange within his or her technical grasp with a reasonable expectation of success.

9. **Claims 1-6** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-6 of U.S. Patent No. 7,087,205 B2.

Although the conflicting claims are not identical, they are not patentably distinct from each other because U.S. Patent No. 7,087,205 B2 discloses a method for carrying out highly exothermic oxidative reactions in pseudo-isothermal conditions and an apparatus for doing such, substantially as in the instant application.

Conclusion

1. No claim is allowed.
2. In general, prior art renders the claimed invention anticipated and obvious.
3. Applicant is required to provide pinpoint citation to the specification (i.e. page and paragraph number) to support any amendments to the claims in all subsequent communication with the examiner. **No new matter will be allowed.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is

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(571) 270-3586. The examiner can normally be reached Monday-Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wayne Langel/
Primary Examiner, Art Unit 1793

BMM

/Brittany M Martinez/
Examiner, Art Unit 1793